



METHODS FOR THE IDENTIFICATION OF INHIBITORS OF BIOTIN SYNTHASE  
EXPRESSION OR ACTIVITY IN PLANTS

This application is the national phase under 35 U.S.C. § 365 of PCT International  
5 Application No. PCT/US02/14473, that has an International filing date of May 7, 2002,  
which designated the United States of America and which claims the benefit of U.S.  
Provisional Application Serial No. 60/289,312, filed May 7, 2001.

FIELD OF THE INVENTION

10 The invention relates generally to plant molecular biology. In particular, the  
invention relates to methods for the identification of herbicides.

BACKGROUND OF THE INVENTION

15 Biotin synthase ("BS") from plants has been fairly well characterized. Biotin  
synthase (bioB, BIO2, BS) (EC 2.8.1.6) is involved in the conversion of dethiobiotin to  
biotin in bacteria, yeast, and higher plants. Bui et al., 440 FEBS LETT. 226-30 (1998)  
(PMID: 9862460); Baldet et al., 217 EUR. J. BIOCHEM 479-85 (1993) (PMID: 8223585);  
and Baldet et al., 319 CR ACAD. SCI. III 99-106 (1996) (PMID: 8680961). This  
20 enzymatic reaction involves the unusual addition of sulfur to form a thiophene ring.  
Ollagnier-de Choudens et al., 453 FEBS LETT. 25-28 (1999) (PMID: 10403368).  
Isolation of a complete biotin synthase Arabidopsis cDNA was first reported in 1996.  
Baldet et al., 319 CR ACAD. SCI. III 99-106 (1996) (PMID: 8680961). The predicted  
amino acid sequence of the plant protein contains the consensus region  
25 GXCXEDCX YCXQ involved in the [2Fe-2S] cluster binding. Id. The threonine-173  
residue, which is highly conserved in biotin synthases, was further shown to be